

WHAT IS CLAIMED IS:

1. A vacuum arc evaporation source, comprising:

a plurality of cathodes including different kinds of materials from one another and being insulated electrically from one another,

wherein said plurality of cathodes are evaporated by vacuum arc discharge to thereby generate plasma having cathode materials.

2. The vacuum arc evaporation source according to Claim 1, wherein said plurality of cathodes are disposed coaxially with one another through an insulating material.

3. The vacuum arc evaporation source according to Claim 1, wherein said plurality of cathodes includes a cathode having a material containing carbon and a cathode having a material containing metal of a group 4A, 5A or 6A in the periodic table.

4. The vacuum arc evaporation source according to Claim 2, wherein each of said cathodes has a circular shape.

5. A film formation apparatus for forming a laminate film including a plurality of heterogeneous films on a surface of a substrate, the apparatus comprising:

a vacuum arc evaporation source having a plurality of

cathodes including different kinds of materials from one another and being insulated electrically from one another, wherein said plurality of cathodes are evaporated by vacuum arc discharge to thereby generate plasma having cathode materials on a surface
5 of the cathode;

an arc power supply for supplying arc discharge power to said plurality of cathodes of said vacuum arc evaporation source; and

a switch for alternatively changing over the arc discharge power of said arc power supply toward said plurality of cathodes of said vacuum arc evaporation source.

6. A film formation apparatus for forming a laminate film including a plurality of heterogeneous films on a surface of a substrate, the apparatus comprising:

a vacuum arc evaporation source having a plurality of cathodes including different kinds of materials from one another and being insulated electrically from one another, wherein said plurality of cathodes are evaporated by vacuum arc discharge to thereby generate plasma having cathode materials on a surface
20 of the cathode; and

a magnetic filter for generating a magnetic field to curve plasma generated by said vacuum arc evaporation source so as to removes coarse particles from the plasma and introduce the
25 plasma, the coarse particles of which is removed, into vicinity

of the substrate.

7. The film formation apparatus according to claim 6,
wherein said magnetic filter comprises:

5 a curved transport duct;
a magnetic coil for generating the magnetic field curved
along said transport duct; and
a DC power supply for exciting said magnetic coil.

10 8. The film formation apparatus according to claim 6,
further comprising:

an arc power supply for supplying arc discharge power to
the plurality of cathodes of said vacuum arc evaporation source;
and

15 a switch for alternatively changing over the arc discharge
power of said arc power supply toward said plurality of cathodes
of said vacuum arc evaporation source.

9. The film formation apparatus according to claim 8;
20 wherein said magnetic filter comprises

a curved transport duct;
a magnetic coil for forming the magnetic field curved along
said transport duct; and
a DC power supply for exciting said magnetic coil.

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10. The film formation apparatus according to claim 5;
further comprising:

a magnet disposed adjacent to the other surface of the
cathode opposite to the surface on which the plasma is generated,
5 for controlling a motion of an arc point of the vacuum arc
discharge.

11. The film formation apparatus according to claim 6;
further comprising:

10 a magnet disposed adjacent to the other surface of the
cathode opposite to the surface on which the plasma is generated,
for controlling a motion of an arc point of the vacuum arc
discharge.